

1. A customer purchases a television set for \$800 using a credit card. The interest is charged on any unpaid balance at the rate of 18% per year compounded monthly. If the customer makes no payment for one year, how much is owed at the end of the year?

$$A = P(1 + \frac{r}{n})^{nt}$$

$$= 800(1 + \frac{.18}{12})^{12 \cdot 1}$$

$$= \$956.49$$

2. A customer purchases a television set for \$800 using a credit card. The interest is charged on any unpaid balance at the rate of 20% per year compounded weekly. If the customer makes no payment for six months, how much is owed at the end of the six months (26 week)?

$$A = 800(1 + \frac{.20}{52})^{52(0.5)}$$

$$\$875.20$$

3. You deposit \$1400 in an account that pays 4% annual interest. Find the balance after 1 year if the interest is compounded with the given frequency.

$$A = P(1 + \frac{r}{n})^{nt}$$

a. Annually

$$A = 1400(1 + \frac{.04}{1})^{1 \cdot 1} = \$1456.00$$

b. Monthly

$$A = 1400(1 + \frac{.04}{12})^{12 \cdot 1} = \$1457.04$$

c. Daily

$$A = 1400(1 + \frac{.04}{365})^{365 \cdot 1} = \$1457.13$$

4. A house was purchased for \$90,000 in 1995. The value of the home increases by 5% per year.

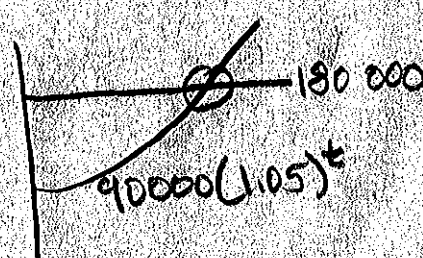
a. What is it worth in the year 2020?

$$90000(1 + .05)^{25} = \$304771.94$$

b. What year is the house worth \$180,000?

$$180000 = 90000(1.05)^t$$

$$t = 14.29 \rightarrow \text{2009}$$



5. You throw 2 fair six-sided die and draw 3 cards from a standard deck of cards (52 cards).

a. How many different combinations of dice and cards are there if the each card is replaced before the next one is drawn?

$$6 \cdot 6 \cdot 52 \cdot 52 \cdot 52 = 5061888$$

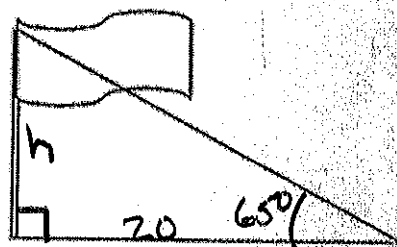
b. How many different combinations of dice and cards are there if no cards are replaced before subsequent ones are drawn?

$$6 \cdot 6 \cdot 52 \cdot 51 \cdot 50 = 4773600$$

6. You are measuring the height of a flag pole. You stand 20 feet from the base of the pole. You measure the angle of elevation from a point on the ground to the top of the pole to be  $65^\circ$ .

a. Estimate the height of the pole to the nearest foot.  $\tan 65 = \frac{h}{20}$

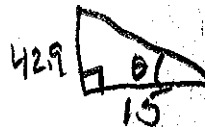
$$h = 20 \tan 65 = 42.9 \text{ ft}$$



b. If you move 5 feet closer to the flagpole, what will you measure the angle of elevation to be?

$$\tan \theta = \frac{42.9}{15} = 2.86$$

$$\theta = \tan^{-1}(2.86) = 70.7^\circ$$



7. Solve the triangle.

$$a^2 + b^2 = c^2$$

$$a^2 + (2.7)^2 = 3^2$$

$$a^2 = 1.71$$

$$a = 1.31$$

$$\cos A = \frac{\text{adj}}{\text{hyp}} = \frac{2.7}{3}$$

$$A = \cos^{-1}\left(\frac{2.7}{3}\right) = 25.8^\circ$$

$$A + B + C = 180$$

$$25.8 + B + 90 = 180$$

$$B = 64.2^\circ$$

